

CHARGE NUMBER: 1307  
PROGRAM TITLE: Reconstituted Tobacco Development  
PERIOD COVERED: April 10 - 30, 1980  
PROJECT LEADER: G. Gellatly

## I. RL PROCESS

The search for equipment to coat a homogenized mixture of STP and CEL on RL base web continued. Coating equipment in the laboratories of AER and St. Regis Corporations was judged to exert too great a strain on the sheet.<sup>1</sup> Another type of coater was recommended by these companies (zero angle blade coater) which will be evaluated in the laboratories of Black Clawson Corporation.

The rate of evaporation fouling by the extract liquor of the burley fraction (66% burley stems, 34% burley by-products) of the RL blend was found to be no greater than the whole blend<sup>2</sup> (34% burley stem, 32% bright stems, 34% mixed STP). This trial was made to determine if separate burley processing, which increases the degree of RL denitration, would present a processing problem in Park 500. However, an RL blend change has since been made which necessitates repeating this fouling rate comparison (90% burley stems in the burley fraction of the blend). The higher burley stem content is expected to increase significantly the rate of evaporator fouling.

## II. RL PRODUCT

A cost estimate of \$140,000 was established for the installation of a tunnel dryer in the RL Pilot Plant to make a direct filling power comparison with Yankee drying. Preliminary experiments showed that a 10% increase in filling power can be achieved. However, the request for authorization of funds<sup>3</sup> will be delayed until dielectric and microwave drying of sheet has been evaluated.<sup>4</sup>

A program was initiated to darken the color of RL sheet to that of cased burley strip. The objective is to achieve this darker color by use of less than ~2% additive.

## III. DENITRATION

The maximum flow and concentration of the RL extract liquor to be treated in the second generation denitration process was determined to be 80 gpm of 11% HWS and 2500 ppm  $\text{NO}_3\text{-N}$ . Both the electrodialysis and the anaerobic processes can effect denitration of this liquor but the aerobic process requires the HWS content to be reduced by dilution to 8% HWS. Using the split flow mode of operation which reduces the volume to be treated to 48 gpm, the liquor concentration is increased to a maximum of 18% HWS and 3,000 ppm  $\text{NO}_3\text{-N}$ . Only the electrodialysis process has reliably demonstrated denitration of this concentration liquor. The development of the aerobic process to denitrate liquor of this higher concentration is proceeding. Comparison of the smoke chemistry of cigarettes containing RL denitrated by electrodialysis, anaerobic and aerobic fermentation indicates significantly higher levels of phenols, catechols and HCN deliveries of the cigarettes containing sheet denitrated by the aerobic fermentation process (FTR).<sup>5</sup> The economic evaluation of these second generation processes continues.

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Development work is being intensified to find a practical process for disposal of the brine from the electrodialysis process. Concentration of the brine from 8% to 30% TS before crystallization yields a cleaner looking product than the present potassium nitrate product of Park 500. Other means of brine disposal being considered are brine exchange before or after crystallization for extract liquor from Lines 1 and 2, using the chilled brine for wash liquor for first stage centrifuge sludge on Lines 1 and 2 and solvent extraction.

#### IV. REFERENCES

- <sup>1</sup> Memo "Investigation of Coating Equipment at AER and St. Regis Corporations" to G. Gellatly from R. O. Ellis, 4/24/80.
- <sup>2</sup> RL Pilot Plant Test File #577.
- <sup>3</sup> Engineering Cost Estimate re RL Tunnel Dryer Installation, Job #1918Ac.
- <sup>4</sup> Memo "Use of Dielectrics for Improved Drying and Increased Filling Power of RL Sheet" to G. Gellatly from R. Z. de la Burde and R. O. Ellis, 4/23/80.
- <sup>5</sup> Minutes of a meeting to discuss 2nd generation RL DN processes, 4/24/80.



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